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(54) Title: **BENEFICIATION OF TITANIA SLAG BY OXIDATION AND REDUCTION TREATMENT**

(57) Abstract: This invention relates to a method of treating titania slag to increase the leachability of impurities from the slag comprising the steps of sizing the titania slag to a particle size from 75 to 850 μm ; oxidising the sized slag particles at a temperature from about 700 °C and above but below about 950 °C allowing the iron present in the slag to concentrate at the exposed surfaces of the slag particles and/or allowing an anatase phase to stabilise in the slag, allowing a major portion of the iron in the Fe(II) state to convert to the Fe(III) state, and allowing the titanium in the Ti(III) state to be converted to the Ti(IV) state; and reducing the oxidised slag in a reducing atmosphere from about 700 °C to about 950 °C to convert a major portion of the iron in the Fe(III) state to the Fe(II) state and without converting a substantial portion of the titanium in the Ti(IV) state to the Ti(III) state. The invention also relates to a method of beneficiating titania slag to increase the TiO_2 content thereof wherein the above treated slag is leached with acid.